

**What Is Claimed Is:**

1. A method for measuring an absolute steering angle of a steering shaft for a vehicle using a first rotatable body and a second rotatable body that rotate together with the steering shaft of the vehicle at a predetermined rotation ratio, respectively, the 5 method comprising the steps of:

obtaining a  $\Psi_M'$  value by measuring a relative rotational angle  $\Psi'$  of the first rotatable body and obtaining a  $\theta_M'$  value by measuring the relative rotational angle  $\theta'$  of the second rotatable body by means of angle sensors whose measurement ranges are  $\Omega_s$ ;

10 obtaining  $\theta_C$ 's by calculating a plurality of relative rotational angles  $\theta$ 's of the second rotatable body corresponding to the  $\Psi_M'$  value, using the relation between the relative rotational angle  $\Psi'$  of the first rotatable body and the relative rotational angle  $\theta'$  of the second rotatable body;

obtaining a frequency  $i$ -value of the first rotatable body by comparing the plurality of  $\theta_C$ 's to the  $\theta_M'$  value; and

15 obtaining an absolute steering angle  $\Phi_1$  of the steering shaft based on the relation between  $\Psi$  and  $\Phi$ , after the absolute rotational angle  $\Psi$  is obtained by using the  $i$ -value.

2. The method according to claim 1, further comprising the steps of:

20 obtaining a present  $i$ -value comparing a previous  $\Psi_M'$  value to a present  $\Psi_M'$  value, obtaining a present value for the absolute rotational angle  $\Psi$  of the first rotatable body, and obtaining a present  $\Phi_1$  value, which is a successive value of the  $\Phi_1$  measurement, based on the relation between  $\Psi$  and  $\Phi$ .

25 3. The method according to claim 1, further comprising the steps of:

obtaining a plurality of  $\Psi_C'$  values by calculating a plurality of  $\Psi'$  values corresponding to the  $\theta_M'$  value using the relation between the  $\Psi'$  values and the  $\theta'$  values;

5 obtaining a frequency  $j$  of the second rotatable body by comparing the plurality of  $\Psi_C'$  values to the  $\Psi_M'$  value;

obtaining an absolute steering angle  $\Phi_2$  of the steering shaft based on the relation between  $\theta$  and  $\Phi$ , wherein the absolute rotational angle  $\theta$  of the second rotatable body is obtained by using the  $j$ -value; and

10 obtaining the steering angle  $\Phi$  of the steering shaft by taking the mean value of the  $\Phi_1$  and the  $\Phi_2$ .

4. The method according to claim 3, further comprising the steps of:

obtaining a present  $i$ -value from a previous  $i$ -value after comparing a previous  $\Psi_M'$  value to a present  $\Psi_M'$  value, obtaining a present value for the absolute rotational angle  $\Psi$  from the obtained present  $i$ -value, and obtaining a present  $\Phi_1$  value from a 15 relation between  $\Psi$  and  $\Phi$ ;

obtaining a present  $j$ -value from a previous  $j$ -value after comparing a previous  $\theta_M'$  value to a present  $\theta_M'$  value, obtaining a present value for the absolute rotational angle  $\theta$  from the obtained present  $j$ -value, and obtaining a present  $\Phi_2$  value from a 20 relation between  $\theta$  and  $\Phi$ ; and

taking the mean value of the present  $\Phi_1$  value and the present  $\Phi_2$  value.

5. The method according to claim 4, wherein if a difference between the  $\Phi_1$  value and the  $\Phi_2$  value,  $\Delta\Phi$ , is greater than a predetermined value, further comprising 25 the steps of:

reobtaining the i-value of the first rotatable body by comparing a plurality of  $\theta_C'$  values to a  $\theta_M'$  value, in which the plurality of  $\theta_C'$  values are obtained by calculating a plurality of  $\theta'$ 's corresponding to a  $\Psi_M'$  value based on the relation between the  $\theta'$  and the  $\Psi'$ ;

5 reobtaining a j-value of a second rotatable body by comparing a plurality of  $\Psi_C'$  values to a  $\Psi_M'$  value, in which the plurality of  $\Psi_C'$  values are obtained by calculating a plurality of  $\Psi'$ 's corresponding to a  $\theta_M'$  value based on the relation between the  $\theta'$  and the  $\Psi'$ ; and

taking the mean value of recalculated  $\Phi_1$  and  $\Phi_2$  values by using the reobtained

10 i-value and the j-value.